

What is claimed is:

- 1 1. A method for optimizing a database query, the database query including criteria that
2 references a plurality of tables in order to re-order a result set generated for the database
3 query; the method comprising the steps of:
4 applying transitive closure analysis to the query; and
5 based on the transitive closure analysis, rewriting the criteria to generate modified
6 criteria to reduce the number of tables referenced thereby.

- 1 2. The method according to claim 1, wherein the criteria is one of a GROUP BY clause
2 and an ORDER BY clause.

- 1 3. The method according to claim 1, wherein the determining step further comprises the
2 step of:
3 determining if the criteria references a first field from a first table and a second
4 field from a second table.

- 1 4. The method according to claim 3, wherein the rewriting step comprises the step of:
2 rewriting the criteria to reference the first field and a third field from the first
3 table.

- 1 5. The method according to claim 1, further comprising the step of:
2 determining if the criteria references a plurality of tables.

1 6. The method according to claim 1, wherein the step of rewriting further includes the
2 step of:

3 rewriting the criteria to generate modified criteria that references only one table,
4 based on the transitive closure analysis.

1 7. The method of claim 1, further comprising the step of:

2 building an index over a column of the one table.

1 8. The method of claim 1, further comprising the step of:

2 building an index over more than one column of the table.

1 9. The method according to claim 1, wherein the database query involves a plurality of
2 join operations and the method further comprises the step of:

3 running the query according to a join order that is based on the modified criteria.

1 10. A method of optimizing a database query, the database query including criteria that
2 operates to re-order a result set of the database query and requires creating a temporary
3 file during operation, the method comprising the steps of:

4 applying transitive closure analysis to the query; and

5 rewriting the criteria, based on the transitive closure analysis, to generate a
6 modified criteria; said modified criteria operating to re-order a result set of the database
7 query and avoid creating a temporary file during operation.

1 11. The method according to claim 10, wherein the criteria is one of a GROUP BY
2 clause and an ORDER BY clause.

1 12. The method according to claim 10, wherein the criteria references a plurality of
2 tables and the modified criteria references a single table.

1 13. A method for optimizing a database query, the database query involving a plurality of
2 join operations and a plurality of search conditions, the method comprising the steps of:
3 applying transitive closure analysis to the plurality of search conditions to
4 determine a subset of equivalent search fields; and
5 rewriting a criteria, that operates to re-order a result set of the database query, to
6 generate a set of respective modified criteria that each reference one or more equivalent
7 search fields.

1 14. The method according to claim 13, wherein the modified criteria comprises one of an
2 ORDER BY clause and a GROUP BY clause.

1 15. The method according to claim 13; further comprising the step of:
2 running the query according to a join order, the join ordered determined by
3 selecting one of the set of respective modified criteria.

1 16. The method according to claim 13, further comprising the step of:
2 identifying a subset of the respective modified criteria that reference a single,
3 respective table and for which an index to that table exists.

1 17. The method according to claim 13, further comprising the step of:
2 identifying a subset of the respective modified criteria that reference a single,
3 respective table and for which an index is to be created.

1 18. The method according to claim 13, further comprising the step of:
2 running the query according to a join order, the join order determined by selecting
3 one of the subset of respective modified criteria.

1 19. The method according to claim 13, further comprising the steps of:
2 performing cost analysis on each of the set of respective modified criteria; and
3 running the query according to a join order, the join order determined based on the
4 cost analysis.

1 20. A program product, comprising:
2 program code configured upon execution thereof to:
3 apply transitive closure analysis to a query that includes criteria that
4 references a plurality of tables in order to re-order a result set generated for the query, and
5 based on the transitive closure analysis, rewrite the criteria to generate modified criteria to
6 reduce the number of tables referenced thereby; and
7 a signal bearing medium bearing the program code.

1 21. The program product of claim 20, wherein the program code is further configured to:
2 run the query according to a join order that is based on the modified criteria.

1 22. A program product, comprising:
2 program code configured upon execution to:
3 apply transitive closure analysis to a plurality of search conditions to
4 determine a subset of equivalent search fields within a database query involving a
5 plurality of join operations and the plurality of search conditions, and rewrite a criteria,
6 that operates to re-order a result set of the database query, to generate a set of respective
7 modified criteria that each reference one or more equivalent search fields; and
8 a signal bearing medium bearing the program code.

1 23. The program product of claim 22 further configured to:
2 run the database query according to a join order, the join ordered determined by
3 selecting one of the set of respective modified criteria.

1 24. An apparatus, comprising:
2 at least one processor;
3 a memory coupled with the at least one processor; and
4 a program code residing in memory and executed by the at least one processor, the
5 program code configured to apply transitive closure analysis to a query that includes
6 criteria that references a plurality of tables in order to re-order a result set generated for
7 the query, and based on the transitive closure analysis, rewrite the criteria to generate
8 modified criteria to reduce the number of tables referenced thereby.